

**Response to Comments on the *Final Revision 1 Radiological Characterization Surveys Work Plan, Parcel F Structures, Hunters Point Naval Shipyard, San Francisco, California, November 2018, DCN: APTM-0006-4550-0025.R1/F***

*Comments by: Sheetal Singh, Senior Health Physicist, CDPH, comments dated March 11, 2019; comments received March 25, 2019*

Specific Comment	Response
<p><b>1. <u>Response to CDPH-EMB's General Comment 2:</u></b></p> <p>CDPH-EMB's General Comment 2 dated January 24, 2019 requested the reclassification of survey units (SUs) investigated during this effort based on the Historical Radiological Assessment (HRA, 2004) and recent developments at the shipyard (i.e., Parcel A-1 Health and Safety surveys performed by CDPH-Radiologic Health Branch (RHB)).</p> <p>Historical activities identify the storage of radioactive waste at these locations. Stored radioactive waste is/was subject to leaks and spills. Leaks and spills originating from waste have the potential to exist with radiological activities above reference area I background levels. However, these activities may be well below 5 micro-Curies (μCi) (i.e., please see Specific Comment 3). Furthermore, these leaks/spills can cause "small areas of elevated activity," like those stated to be unlikely in Section 5.1 of the current iteration of this report. Without detailed information diagramming storage locations of waste, OPERATION CROSSROADS activities, and other forms of identified potential sources of radioactive contamination a SU styled after a MARSSIM class 2 (or higher) provides greater confidence that all areas have been investigated thoroughly. The classification of SUs as MARSSIM class 3 does not provide the level of confidence, in the sampling effort, demanded by a site where residual radioactivity is repeatedly described as, "trace amounts." CDPH- EMB continues to request the reclassification of all SUs.</p> <p>Adjustment to a MARSSIM class 1 or 2 SU will allow for systematic sampling. Systematic sampling affords a greater confidence in identification of smaller areas of elevated activity. Please refer to figure D.7 in Appendix D" The Planning Phase of the Data Life Cycle" of the MARSSIM manual. CDPH-EMB has requested this reclassification beginning with the first round of comments on the DRAFT report issued February 27, 2018. CDPH-EMB has yet to receive an adequate response to this request.</p>	<p>The surveys will be revised to Class 2 survey units. The survey units will retain the same size and will continue to include 100 percent surface gamma scans, 25 percent alpha/beta surveys, and 54 alpha/beta static measurements per survey unit at each Survey Unit. The static measurements will be collected systematically.</p>
<p><b>2. <u>Response to CDPH-EMB's Specific Comment 4:</u></b></p> <p>CDPH-EMB recognizes that, "the Navy is not requesting a recommendation for unrestricted radiological release [RURR] of Parcel F Structures at this time." However, the survey protocols, as currently detailed in FINAL Rev 1</p>	<p>The Navy will implement a systematic static sampling approach, consistent with Response 1 to be sufficient for the scoping survey data quality objectives.</p>

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<p>Radiological Characterization Surveys Work Plan, Parcel F Structures is inadequate to meet the requirements of a scoping survey.</p>	
<p><b>3. <u>Response to CDPH-EMB's Specific Comment 6:</u></b></p> <p>CDPH-EMB's Specific Comment 6 requested clarification on minimum detectable count rate (MDCR) calculations. The response specified that the MDCR calculations rely on an input of five (5) micro-curies (<math>\mu\text{Ci}</math>), representing an intact deck marker. This approach is inadequate as the focus of the current work plan is to find any radiological contamination even trace amounts and not just intact deck markers.</p> <p>Please note that the CDPH-RHB's health and safety survey effort was designed to identify immediate hazards to human health. The parameters used by RHB to develop their work plan are not applicable to the current work plan based on historical information of the Parcel F structures. Please see comment #1.</p>	<p>Appendix D was reviewed and revised to clarify the minimum detectable activity (MDA). The calculated MDA is well below 5 microcuries. Appendix D Section 2.5, Conclusions was revised to state:</p> <p>“The RSI-700 NaI scintillation scan MDC for <math>^{226}\text{Ra}</math> in secular equilibrium with progeny, for an intact point source, is estimated to be less than 200 pCi for scan speeds less than 4.0 m/s. The values computed are indicative of a sensitive instrument that agrees with scan MDC data presented in NUREG-1507 Section 6.8.2 and MARSSIM Table 6.7 for the contaminants of concern.</p> <p>An intact deck marker containing 5 microcuries of <math>^{226}\text{Ra}</math> can be detected by the RS-700 at any reasonable scan speed (see Table 7). <u>Other point sources (e.g., broken or degraded deck markers) containing less than 200 pCi of <math>^{226}\text{Ra}</math> (0.004% of an intact deck marker) can also be detected by the RS-700 at scan speeds ranging from 0.5 to 4.0 m/s (Table 7). For the purposes of this project, scan speeds for the RS-700 will be maintained at 1 m/s or less, providing a MDC of 83 pCi (0.00017% of an intact deck marker).”</u></p> <p>There are no records indicating that radioactive wastes were stored at the submarine pens or finger piers. Work Plan Section 2.2, Site Description and History, was revised as follows:</p> <p>“Radiological operations generally performed at HPNS that could impact the submarine pens and finger piers included the use of generally licensed radioactive material, including handling and refurbishment of radioluminescent devices. Other activities involving radioactive material included gamma radiography, and calibration of radiation detection instruments. <u>There are no records indicating that wastes, including radioactive wastes, were stored at either the submarine pens or the finger piers.”</u></p>
<p><b>4. <u>Response to CDPH-EMB's Specific Comment 12:</u></b></p> <p>CDPH-EMB requested clarification of strontium-90 (<math>^{90}\text{Sr}</math>) and plutonium-239 (<math>^{239}\text{Pu}</math>) testing relationship (i.e., the reliance of <math>^{239}\text{Pu}</math> testing on a positive <math>^{90}\text{Sr}</math> result). The response is inadequate since it does not provide evidence that the two isotopes coexist in potential contamination. Since <math>^{239}\text{Pu}</math> is a</p>	<p>Strontium-90 (<math>^{90}\text{Sr}</math>) and plutonium-239 (<math>^{239}\text{Pu}</math>) may coexist in potential contamination related to historical OPERATION CROSSROADS activities. The scoping survey has been revised to a Class 2 survey with systematic samples.</p>

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radionuclide of concern (ROC), sampling efforts must be able to identify any elevated location. Sporadic alpha static measurements coupled with a 25% alpha scanning effort does not supply confidence that elevated <sup>239</sup>Pu locations will be identified.